MASTER OF NEUROMORPHIC ENGINEERING (8123)

Approved Abbreviation: MNeuroEng
Western Sydney University Program Code: 8123
AQF Level: 9

CRICOS Code: 106435C

This program applies to students who commenced in 2022 or later.

Handbook Summary 2022-2023

Neuromorphic Engineering is an exciting inter-disciplinary field combining aspects from electrical engineering, computer science, neuroscience, signal processing and mathematics. The Master of Neuromorphic Engineering offers students an opportunity to partner with high-profile industry partners in an applied project or a research project, mentored by leading researchers from the International Centre for Neuromorphic Systems at the MARCS Institute. This program seeks to address the rapidly growing demand for alternative inter-disciplinary technologies, such as bio-inspired agile sensory systems, smart edge devices, and brain-inspired high performance computational platforms. The students will be introduced to state-of-the-art neuromorphic hardware, sensors and algorithms in a highly structured way that increases their acumen for approaching new situations with creativity and initiative.

All students will enrol in the 8124 Master of Neuromorphic Engineering and have the option to transition to 8123 Master of Neuromorphic Engineering (Research) at the end of their first year. A student completing the two-year degree may apply to pursue a PhD. Two exit options (Graduate Certificate in Neuromorphic Engineering and Graduate Diploma in Neuromorphic Engineering) are also available.

The majority of the coursework subjects will be undertaken at Parramatta City - Hassall St campus, while the applied project and research project will be located at Penrith campus.

Handbook Summary 2024

Neuromorphic Engineering is an exciting inter-disciplinary field combining aspects from electrical engineering, computer science, neuroscience, signal processing and mathematics fields. The Master of Neuromorphic Engineering offers students an opportunity to partner with high-profile industry partners in a research project, mentored by leading researchers from the International Centre for Neuromorphic Systems at the MARCS Institute. This program seeks to address the rapidly growing demand for alternative inter-disciplinary technologies, such as bio-inspired agile sensory systems, smart edge devices, and brain-inspired high performance computational platforms. The students will be introduced to state-of-the-art neuromorphic hardware, sensors and algorithms in a highly structured way that increases their acumen for approaching new situations with creativity and initiative.

Students eligible to transition from 8124 Master of Applied Neuromorphic Engineering to 8123 Master of Neuromorphic Engineering are to undertake ELEC 6002 after the end of their first year while meeting the GPA 4.5 transition criteria.

High-achieving students will selectively enrol in the full-time 8123 M Neuromorphic Engineering. A student completing the two-year degree may apply to pursue a PhD. Two exit options (Graduate Certificate in Neuromorphic Engineering and Graduate Diploma in Neuromorphic Engineering) are also available.

The majority of the coursework subjects will be undertaken at Werrington South - Kingswood campus, except for COMP 7024

Programming for Data science and INFO 7001 Advanced Machine Learning subjects.

Study Mode

Two years full-time. Students may be required to travel between campuses to complete their subjects.

Program Advice

Bharath Ramesh (https://directory.westernsydney.edu.au/search/email/B.Ramesh@westernsydney.edu.au)

Prospective students should visit the following websites for general enquiries about this program.

Enquire about this program (https://enquiry.westernsydney.edu.au/courseenquiry/)| Local Admission (https://www.westernsydney.edu.au/future/) | International Admission (https://www.westernsydney.edu.au/international/home/apply/admissions/) |

Location

Campus	Attendance	Mode	Advice
Parramatta City Campus - Macquarie Street	Full Time	Internal	See above
Penrith Campus	Full Time	Internal	See above

The below admissions details are relevant from 2024 onwards.

- An undergraduate degree in electrical, electronics, biomedical engineering, computer science, physics or mathematics; and
- A one-page Statement of Purpose showcasing solid achievements for applying to this program and relevant academic research or project background that make the case for success in graduate study; and
- Be selected by interview from the International Centre for Neuromorphic Systems (ICNS) within The MARCS Institute.

Or

Completion of first year subjects (80cps) in 8124 Master of Applied Neuromorphic Engineering with a GPA of 4.5.

Applicants who meet the academic requirement will be invited to an interview to discuss previous experience and suitability for the program.

Recommended Sequence 2022 - 2023

Qualification for this award requires the successful completion of 160 credit points as per the recommended structure below.

Full-time

Course	Title	Credit Points
Year 1		
Autumn session		
ELEC 6004	Neuromorphic Electronics Design	10
MATH 7019	Mathematics of Signal Processing	10
NATS 6001	Introduction to Neuroscience	10
COMP 7024	Programming for Data Science	10
	Credit Points	**40**
Spring session		
ELEC 6003	Neuromorphic Accelerators	10
COMP 6001	Neuromorphic Algorithms and Computation	10

Course	Title	Credit Points
COMP 6002	Neuromorphic Sensing	10
INFO 7001	Advanced Machine Learning	10
	Credit Points	**40**
Year 2		
Autumn session		
ELEC 6002	Master Dissertation in Neuromorphic Engineering	40
	Credit Points	**40**
Spring session		
ELEC 6002	Master Dissertation in Neuromorphic Engineering	40
	Credit Points	**40**
	Total Credit Points	**160**

Recommended Sequence 2024

Qualification for this award requires the successful completion of 160 credit points as per the recommended structure below.

Full-time

Course	Title	Credit Points
Year 1		
Autumn session		
ELEC 6004	Neuromorphic Electronics Design	10
MATH 7019	Mathematics of Signal Processing	10
NATS 6001	Introduction to Neuroscience	10
COMP 7024	Programming for Data Science	10
	Credit Points	**40**
Spring session		
ELEC 6003	Neuromorphic Accelerators	10
COMP 6001	Neuromorphic Algorithms and Computation	10
COMP 6002	Neuromorphic Sensing	10
INFO 7001	Advanced Machine Learning	10
	Credit Points	**40**
Year 2		
1H session		
ELEC 6002	Master Dissertation in Neuromorphic Engineering [1]	40
	Credit Points	**40**
2H session		
ELEC 6002	Master Dissertation in Neuromorphic Engineering [1]	40
	Credit Points	**40**
	Total Credit Points	**160**

[1] 80 credit point subject taken over 2 sessions (40cps each session)